Claims

- 1. A Virtual Device composed of a multitude of stationary and/or portable electronic devices, of which at least one of the devices is a first Open Device with an available
- 5 inner structure and a network interface, at least one Primitive Device arranged to communicate with other Devices and act as a pure slave to said devices,
 - c h a r a c t e r i z e d $\,$ i n $\,$ at least one Closed Device with a closed inner structure and a network interface, ,
- 10 said open and closed devices being connected in a Personal Area Network, a Personal Area Network middleware being installed in said first Open Device, said first Open Device being arranged to act as a Personal Area Network controller.
- 15 2. A Virtual Device as claimed in claim 1, charachterized in a second Open Device connected to said Personal Area Network.
 - 3. A Virtual Device composed of a multitude of stationary and/or portable electronic devices, including an Open
- Devices with an available inner structure and a network interface, at least one Primitive Device arranged to communicate with other devices and act as a pure slave to said devices,
- characterized in at least one additional
 Open Device, at least one Closed Device with a closed inner structure and a network interface, said open and closed devices being connected in a Personal Area Network, a Personal Area Network middleware being installed on said Open Devices, said Personal Area Network Middleware being distributed between said Open Devices, said Open Devices
- 30 distributed between said Open Devices, said Open Devices being arranged to act as a Personal Area Network controller.
- 4. A Virtual Device as claimed in claim 3,c h a r a c t e r i z e d i n that a Web services35 platform is installed on each Open Device, each Open Device

being arranged to invoke Web services running on other Open Devices.

5. A Virtual Device as claimed in claim 1, 2, 3 or 4, c h a r a c t e r i z e d i n that at least one of said Open or Closed Devices is equipped with a network interface connected to an external network.

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- 6. A Virtual Device as claimed in claim 5,
 c h a r a c t e r i z e d i n a server in said external network arranged to store a backup copy of information
 stored in said Personal Area Network, and synchronize said backup copy with said information.
 - 7. A Virtual Device as claimed in claim 1, 2, 3 or 4, c h a r a c t e r i z e d i n that said open device or devices is/are arranged to discover and register any devices present in said Personal Area Network.
 - 8. A Virtual Device as claimed in claim 7, c h a r a c t e r i z e d i n that said open device or devices is/are arranged to periodically poll the network.
- 9. A Virtual Device as claimed in claim 1, 2, 3 or 4,20 characterized in that said open device or devices is/are arranged to redirect an output stream from one device to an input port on another device.
- 10. A Virtual Device as claimed in claim 1, 2, 3 or 4, c h a r a c t e r i z e d i n that said open device or devices is/are arranged to redirect an application to a specific device present in said Personal Area Network.
 - 11. A Virtual Device as claimed in any of the claims 1, 2, 3 or 4,
- c h a r a c t e r i z e d i n that said Open Device or 30 Open Devices is/are arranged to store and maintain a device profile, said device profile including information on at least identity, type, capabilities and services offered by

any Open, Closed or Primitive Devices available for said Private Area Network.

- 12. A Virtual Device as claimed in any of the claims 7-10, c h a r a c t e r i z e d i n that said Open Device or Open Devices is/are arranged to store and maintain a user profile, said user profile including information on at least which Open, Closed or Primitive Devices that are members of said Private Area Network, which Open, Closed or Primitive Devices that are available for said Private Area Network, redirection information, which Open, Closed or Primitive Devices that should be visible on an external network, the distribution of services among Open or Closed Devices present, and the distribution of resources among Open or Closed Devices present.
- 13. A Virtual Device composed of a multitude of portable electronic devices, including an Open Device with an available inner structure and a network interface, at least one Primitive Device arranged to communicate with other devices and act as a pure slave to said devices,
- 20 characterized in at least one Closed Device with a closed inner structure and a network interface, said at least one Closed Device being equipped with a network interface connected to an external network which includes a Personal Area Network server, a Personal Area Network
- 25 middleware being installed on said server, said open and closed devices and said server forming a Personal Area Network operated by said Personal Area Network middleware.
 - 14. A Virtual Device composed of a multitude of portable electronic devices,
- 30 characterized in a Closed Device with a closed inner structure and a network interface connected to an external network, at least one Primitive Device arranged to communicate with said Closed Device or devices and act as a pure slave to said device or devices, a server in said external network on which is installed a Personal Area

Network middleware, said server being arranged to

communicate with said closed device or devices in order to act as a Personal Area Network controller.

- 15. A Virtual Device as claimed in claim 14, character ized in that said server is arranged to store a backup copy of information stored in said Personal Area Network, and synchronize said backup copy with said information.
- 16. A Virtual Device as claimed in claim 13, 14 or 15, c h a r a c t e r i z e d i n that said server is
 10 arranged to discover and register any devices present in said Personal Area Network.
 - 17. A Virtual Device as claimed in claim 16, c h a r a c t e r i z e d i n that said server is arranged to periodically poll the network.
- 15 18. A Virtual Device as claimed in claim 13, 14 or 15, c h a r a c t e r i z e d i n that said server is arranged to redirect an output stream from one device to an input port on another device.
- 19. A Virtual Device as claimed in claim 13, 14 or 15,20 characterized in that said open device or devices is/are arranged to redirect an application to a specific device present in said Personal Area Network.
 - 20. A Virtual Device as claimed in any of the claims 14-15,
- 25 characterized in that said server is arranged to store and maintain a device profile, said device profile including information on at least identity, type, capabilities and services offered by any Open, Closed or Primitive Devices available for said Private Area

 30 Network.
 - 21. A Virtual Device as claimed in claim 16, 17, 18 or 19, c h a r a c t e r i z e d i n that said server is arranged to store and maintain a user profile, said user

profile including information on at least which Open, Closed or Primitive Devices that are members of said Private Area Network, which Open, Closed or Primitive Devices that are available for said Private Area Network, redirection information, which Open, Closed or Primitive Devices that should be visible on an external network, the distribution of services among Open or Closed Devices present, and the distribution of resources among Open or Closed Devices present.

- 10 22. A Virtual Device as claimed in claim 12 or 21, c h a r a c t e r i z e d i n an interface to said Personal Area Network middleware allowing a user to control the Personal Area Network middleware.
 - 23. A Virtual Device as claimed in claim 12 or 21,
- 15 characterized in an Application Programming Interface to said Personal Area Network middleware allowing an application access to capabilities and functions of said Personal Area Network middleware.
 - 24. A Virtual Device as claimed in claim 23,
- 20 characterized in that said Application Programming Interface is implemented in Java or CORBA, or as an XML Web service.